IN THE CLAIMS

1-42. (canceled)

43. (new) A nucleic acid molecule selected from a group consisting of

      i) nucleic acid molecules encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:2,

      ii) nucleic acid molecules comprising the sequence of SEQ ID NO:1,

      iii) nucleic acid molecules consisting of the sequence of SEQ ID NO:1,

      iv) nucleic acid molecules the complementary strand of which hybridizes under stringent conditions to a nucleic acid molecule of (i), (ii), or (iii); and

      v) nucleic acid molecules the sequence of which differs from the sequence of a nucleic acid molecule of (iii) due to the degeneracy of the genetic code;

      wherein the polypeptide encoded by the nucleic acid molecule has MGAT-X1 activity.

44. (new) A purified polypeptide selected from a group consisting of

      i) a polypeptide consisting of SEQ ID NO:2,

      ii) a polypeptide comprising the sequence of SEQ ID NO:2,

      iii) polypeptides encoded by nucleic acid molecules of claim 43; and

      iv) polypeptides which show at least 99%, 98%, 95%, 90%, or 80% homology with a polypeptide of (i), (ii), or (iii);

      wherein the purified polypeptide has MGAT-X1 activity.

45. (new) A vector comprising the nucleic acid molecule of claim 52.

46. (new) A host cell containing a vector comprising the nucleic acid molecule of claim 52.

47. (new) A method of producing a MGAT-X1, comprising:

      i) culturing a host cell comprising a vector which comprises the nucleic acid molecule of claim 52 under suitable conditions; and

ii) recovering the MGAT-X1 from the culture medium.

48. (new) A method for the detection of a nucleic acid molecule encoding a MGAT-X1 in a sample, comprising:

i) hybridizing a nucleic acid molecule to nucleic acid material of the sample, thereby forming a hybridization complex, wherein the nucleic acid molecule is selected from a group consisting of

a) nucleic acid molecules encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:2,

b) nucleic acid molecules comprising the sequence of SEQ ID NO:1,

c) nucleic acid molecules having the sequence of SEQ ID NO:1,

d) nucleic acid molecules the complementary strand of which hybridizes under stringent conditions to a nucleic acid molecule of (a), (b), or (c); and

e) nucleic acid molecules the sequence of which differs from the sequence of a nucleic acid molecule of (c) due to the degeneracy of the genetic code;

wherein the polypeptide encoded by the nucleic acid molecule has MGAT-X1 activity; and

ii) detecting the hybridization complex.

49. (new) The method of claim 48 further comprising amplification of the nucleic acid material.

50. (new) A method for the detection of a nucleic acid molecule, comprising:

i) contacting a sample with a reagent which specifically interacts with a nucleic acid molecule selected from a group consisting of

a) nucleic acid molecules encoding a polypeptide comprising the amino acid sequenceof SEQ ID NO:2,

b) nucleic acid molecules comprising the sequence of SEQID NO:1,

c) nucleic acid molecules having the sequence of SEQ ID NO:1,

d) nucleic acid molecules the complementary strand of which hybridizes under stringent conditions to a nucleic acid molecule of (a), (b), or (c); and

e) nucleic acid molecules the sequence of which differs from the sequence of a nucleic acid molecule of (c) due to the degeneracy of the genetic code;

wherein the polypeptide encoded by the nucleic acid molecule has MGAT-X1 activity; and

ii) detecting an interaction between the reagent and the nucleic acid molecule.

51. (new)   A method for the detection of a polypeptide, comprising:

i) contacting a sample with a reagent which specifically interacts with a polypeptide selected from a group consisting of

a) a polypeptide consisting of SEQ ID NO:2,

b) a polypeptide comprising the sequence of SEQ ID NO:2,

c) polypeptides encoded by nucleic acid molecules of claim 43; and

d) polypeptides which show at least 99%, 98%, 95%, 90%, or 80% homology with a polypeptide of (a), (b), or (c);

wherein the polypeptide has MGAT-X1 activity; and

ii) detecting an interaction between the reagent and the polypeptide.

52. (new)   A method for screening for regulators of the activity of a MGAT-X1, comprising:

i) contacting a test compound with a polypeptide selected from a group consisting of:

a) a polypeptide consisting of SEQ ID NO:2,

b) a polypeptide comprising the sequence of SEQ ID NO:2,

c) polypeptides encoded by nucleic acid molecules of claim 43; and

d) polypeptides which show at least 99%, 98%, 95%, 90%, or 80%

homology with a polypeptide of (a), (b), or (c);

wherein the polypeptide has MGAT-X1 activity; and

ii) detecting binding of the test compound to the polypeptide,

wherein a test compound that binds to the polypeptide is identified as a potential regulator of

MGAT-Xl activity.

53. (new) The method of claim 52, wherein the step of contacting is in or at the surface of a

cell.

54. (new) The method of claim 53 wherein the cell is *in vitro*.

55. (new) The method of claim 52 wherein the step of contacting is in a cell-free system.

56. (new) The method of claim 52 wherein the polypeptide is coupled to a detectable label.

57. (new) The method of claim 52, wherein the compound is coupled to a detectable label.

58. (new) The method of claim 52, wherein the test compound displaces a ligand which is

bound to the polypeptide.

59. (new) The method of claim 52, wherein the polypeptide is attached to a solid support.

60. (new) The method of claim 52, wherein the compound is attached a solid support.

61. (new) A method of screening for regulators of the activity of a MGAT-X1, comprising:

i) measuring the activity of a polypeptide at a certain concentration of a test

compound or in the absence of the test compound, wherein the polypeptide is selected

from a group consisting of:

a) a polypeptide consisting of SEQ ID NO:2,

b) a polypeptide comprising the sequence of SEQ ID NO:2,

c) polypeptides encoded by nucleic acid molecules of claim 43; and

d) polypeptides which show at least 99%, 98%, 95%, 90%, or 80% homology with a polypeptide of (a), (b), or (c);

wherein the polypeptide has MGAT-X1 activity; and

ii) measuring the activity of the polypeptide at a different concentration of the test compound,

wherein the test compound is identified as a regulator of the activity of a MGAT-X1 when there is a significant difference between the activities measured in (i) and (ii).

62. (new) The method of claim 61 wherein the activities are measured in a cell.

63. (new) The method of claim 62 wherein the cell is *in vitro*.

64. (new) The method of claim 61 wherein the activities are measured in a cell- free system.

65. (new) A method of screening for regulators of MGAT-X1, comprising:

i) contacting a test compound with a nucleic acid molecule molecule selected from a group consisting of

a) nucleic acid molecules encoding a polypeptide comprising the amino acid sequenceof SEQ ID NO:2,

b) nucleic acid molecules comprising the sequence of SEQID NO:1,

c) nucleic acid molecules having the sequence of SEQ ID NO:1,

d) nucleic acid molecules the complementary strand of which hybridizes under stringent conditions to a nucleic acid molecule of (a), (b), or (c); and

e) nucleic acid molecules the sequence of which differs from the sequence of a nucleic acid molecule of (c) due to the degeneracy of the genetic code;

wherein the polypeptide encoded by the nucleic acid molecule has MGAT-X1 activity; and

      ii) detecting binding of the test compound to the nucleic acid molecule,

wherein the test compound is identified as a potential regulator of MGAT-XI when it binds to the nucleic acid molecule.

66. (new) The method of claim 65 wherein the nucleic acid molecule is RNA.

67. (new) The method of claim 65 wherein the contacting step is in or at the surface of a cell.

68. (new) The method of claim 65 wherein the contacting step is in a cell-free system.

69. (new) The method of claim 65 wherein the polypeptide or nucleic acid molecule is coupled to a detectable label.

70. (new) The method of claim 65 wherein the test compound is coupled to a detectable label.

71. (new) A method of diagnosing an MGAT-X1 related disease in a diseased mammal, comprising:

      i) measuring the amount of a nucleic acid molecule in a sample taken from the diseased mammal, wherein the nucleic acid molecule is selected from a group consisting of

          a) nucleic acid molecules encoding a polypeptide comprising the amino acid sequenceof SEQ ID NO:2,

          b) nucleic acid molecules comprising the sequence of SEQ ID NO:1,

          c) nucleic acid molecules having the sequence of SEQ ID NO:1,

          d) nucleic acid molecules the complementary strand of which hybridizes under stringent conditions to a nucleic acid molecule of (a), (b), or (c); and

          e) nucleic acid molecules the sequence of which differs from the sequence of a nucleic acid molecule of (c) due to the degeneracy of the genetic code;

wherein the polypeptide encoded by the nucleic acid molecule has MGAT-X1 activity; and

ii) comparing the result of (i) to the amount of the nucleic acid molecule in at least one healthy mammal,

wherein a MGAT-X1 related disease is diagnosed in the diseased mammal when the amount of the nucleic acid molecule in the diseased mammal is significantly different from the amount of the nucleic acid molecule in the at least one healthy mammal.

72. (new) A pharmaceutical composition comprising a nucleic acid molecule selected from the group consisting of:

i) nucleic acid molecules encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:2,

ii) nucleic acid molecules comprising the sequence of SEQ ID NO:1,

iii) nucleic acid molecules having the sequence of SEQ ID NO:1,

iv) nucleic acid molecules the complementary strand of which hybridizes under stringent conditions to a nucleic acid molecule of (i), (ii), or (iii); and

v) nucleic acid molecules the sequence of which differs from the sequence of a nucleic acid molecule of (iii) due to the degeneracy of the genetic code;

wherein the polypeptide encoded by the nucleic acid molecule has MGAT-X1 activity.

73. (new) A pharmaceutical composition comprising a vector comprising a nucleic acid molecule selected from a group consisting of

i) nucleic acid molecules encoding a polypeptide comprising the amino acid sequence of SEQ ID NO:2,

ii) nucleic acid molecules comprising the sequence of SEQ ID NO:1,

iii) nucleic acid molecules having the sequence of SEQ ID NO:1,

iv) nucleic acid molecules the complementary strand of which hybridizes under stringent conditions to a nucleic acid molecule of (i), (ii), or (iii); and

v) nucleic acid molecules the sequence of which differs from the sequence of a nucleic acid molecule of (iii) due to the degeneracy of the genetic code;

wherein the polypeptide encoded by the nucleic acid molecule has MGAT-X1 activity.

74. (new)   A pharmaceutical composition comprising a polypeptide selected from the group consisting of:

i) a polypeptide consisting of SEQ ID NO:2,

ii) a polypeptide comprising the sequence of SEQ ID NO:2,

iii) polypeptides encoded by nucleic acid molecules of claim 43; and

iv) polypeptides which show at least 99%, 98%, 95%, 90%, or 80% homology with a polypeptide of (i), (ii), or (iii);

wherein the polypeptide has MGAT-X1 activity.

75. (new)   A pharmaceutical composition comprising a regulator of MGAT-X1 selected from the group constisting of an RNA molecule, an antisense oligonucleotide, an antibody, or a ribozyme.

Respectfully submitted,

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Date: March 27, 2006

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